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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/784,626 | 02/14/2001 | Daniel I. Some | 49959-145 | 3092 |

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APPLIED MATERIALS, INC.
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EXAMINER

SONG, HOON K

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 09/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/784,626

Applicant(s)

SOME ET AL.

Examiner

Hoon Song

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 30-32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 10-12, 1526, 28-29 and 33-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsai et al. (US 5822055)

Regarding claims 1, 21-22, Tsai teaches an apparatus for inspecting a surface of an article, the apparatus comprising (figure 9):

a light source for irradiating a portion of the surface of the article with a light beam at an incident wavelength (figure 9);

a first detector for receiving light at the incident wavelength from the portion of the surface and generating a first signal responsive to the light at the incident wavelength (figure 9);

a second detector for receiving light at a wavelength different from the incident wavelength from the portion of the surface and generating a second signal responsive to the light at the wavelength different from the incident wavelength (column 12 line 19+); and

a processor configured for determining, based on the first and second signals, whether a defect exists on the portion of the surface (column 9 line 45+).

Regarding claim 2, Tsai teaches that the light source is a laser for producing laser light at the incident wavelength (column 9 line 10+).

Regarding claim 3, Tsai teaches that the laser provides continuous wave laser light.

Regarding claims 4-6, Tsai teaches a scanner for scanning the laser light across the surface of the article from the portion of the surface to another portion of the surface (column 6 line 28+).

Regarding claim 7, Tsai teaches that the first and second detectors comprise a linear detector array comprising semiconductor detectors (column 12 line 19+).

Regarding claim 8 and 26, Tsai teaches that the second detector (fluorescent detector) is for detecting fluorescence from the portion of the surface.

Regarding claims 10 and 28, Tsai teaches that the second detector is for detecting second harmonic generation (fluorescent).

Regarding claim 11, Tsai teaches that the first and second detectors comprise photo-multipliers (well known).

Regarding claims 12, 17-19 and 29 Tsai teaches that a separator (dichroic coatings on beam splitters) disposed between the surface of the article and the first and second detectors, for separating the light from the portion of the surface at the incident wavelength from the light at the other wavelength and directing the light to the first and second detectors and objectives lens is for passing the light from the portion of the surface of the article to the separator (column 12 line 31+ and figure 10).

Regarding claim 15, Tsai teaches that the separator comprises a bandpass filter (beam splitter).

Regarding claim 16, Tsai teaches that the separator comprises a focusing lens (figure 10).

Regarding claim 20, Tsai teaches that the processor is configured to generate a defect map of the surface of the article (column 6 line 27+).

Regarding claims 23-25, Tsai teaches that scanning the light beam across the surface of the article from the portion of the surface to another portion of the surface (well known, figure 10).

Regarding claim 33, Takeda teaches that the determining step comprises determining the defect exists when the second signal is a predetermined value, the predetermined value corresponding to a particular wavelength other than the incident wavelength (column 12 line 19+).

Regarding claim 34, Takeda teaches that classifying (map) the defect into a predetermined category when the second signal is the predetermined value (column 6 line 27+).

Claims 1 and 21-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Hara et al. (US 4692690).

Regarding claims 1, 21-22, Tsai teaches an apparatus (figure 2) comprising:
a light source (11) for irradiating a portion of the surface of the article with a light beam at an incident wavelength (32);

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a first detector (15') for receiving light at the incident wavelength from the portion of the surface and generating a first signal responsive to the light at the incident wavelength (45, reflected IR light);

a second detector (19) for receiving light at a wavelength different from the incident wavelength from the portion of the surface and generating a second signal responsive to the light at the wavelength different from the incident wavelength (44, fluorescent light) and

a processor configured for determining, based on the first and second signals, whether a defect exists on the portion of the surface (abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Tsai.

Regarding claims 13-14, Tsai fails to teach that the separator comprises a diffraction grating and a cylindrical lens.

However, since these components are known in the art to separate two different beams all of these are clearly within the level of ordinary skill in the art to use and would have been obvious to one of ordinary skill in the art to employ absent any showing of criticality based solely on design choice.

Claims 9 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai in view of Hossain et al. (US 6067154)

Regarding claim 9 and 27, Tsai fails to teach that the second detector is for detecting Raman scattering from the portion of the surface.

Hossain teaches a method of identifying defects in semiconductor using Raman scatter detector (abstract).

In view of Hossain, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to substitute the fluorescent detector with Raman scatter detector because it would obtain nondestructive molecular identification of semiconductor manufacturing defects. (column 3 line 55+)

Allowable Subject Matter

Claims 30-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Regarding claim 30-32, None of the prior art teaches or suggests that irradiating a portion of a reference surface corresponding to the portion of the surface of the article with a light beam at the incident wavelength; receiving light at the incident wavelength from the portion of the reference surface at the first detector to generate a third signal; and receiving light at a wavelength different from the incident wavelength from the portion of the reference surface at the second detector to generate a fourth signal.

Response to Arguments

Applicant's arguments with respect to claims 1-34 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is 703-308-2736. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 703-308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Hoon Song


EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER